

FIG. 4

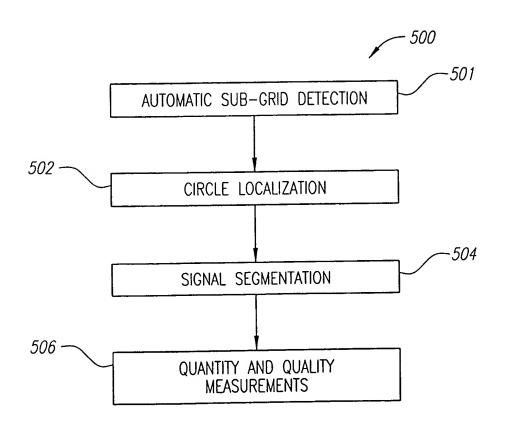
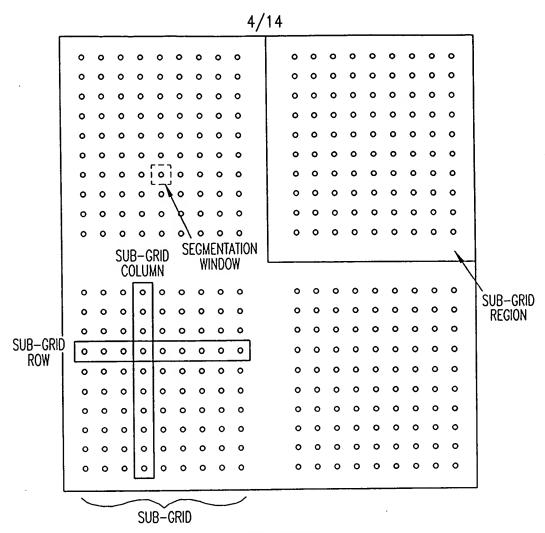


FIG. 5



2 x 2 MICROARRAY

FIG. 6

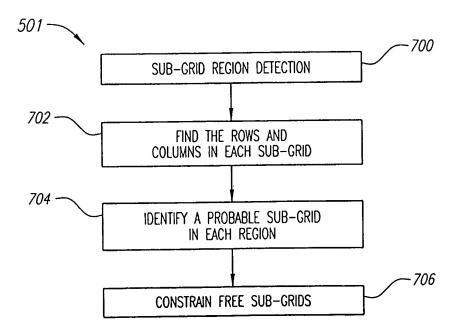
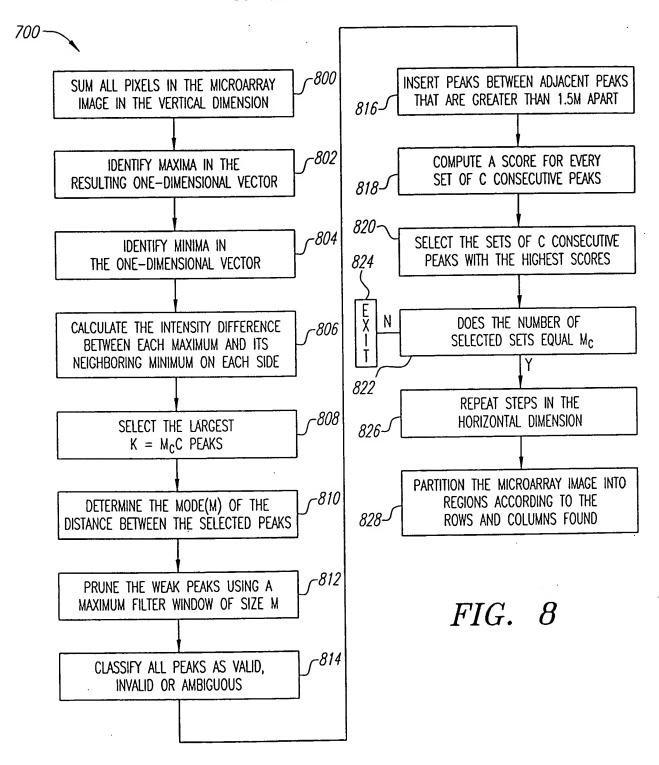


FIG. 7

#### SUB-GRID REGION DETECTION



#### SUB-GRID ROWS AND COLUMNS DETECTION

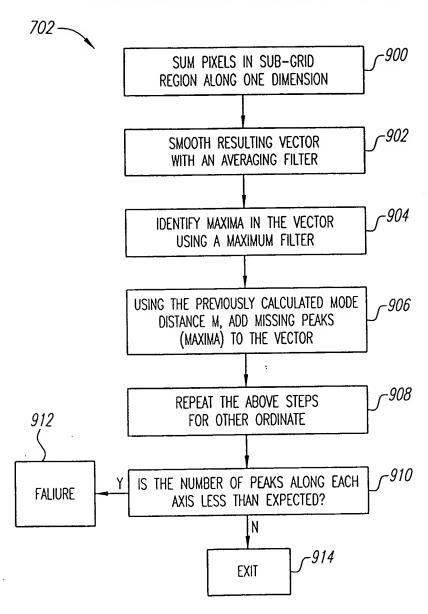


FIG. 9

### IDENTIFYING SUB-GRIDS IN EACH SUB-GRID REGION

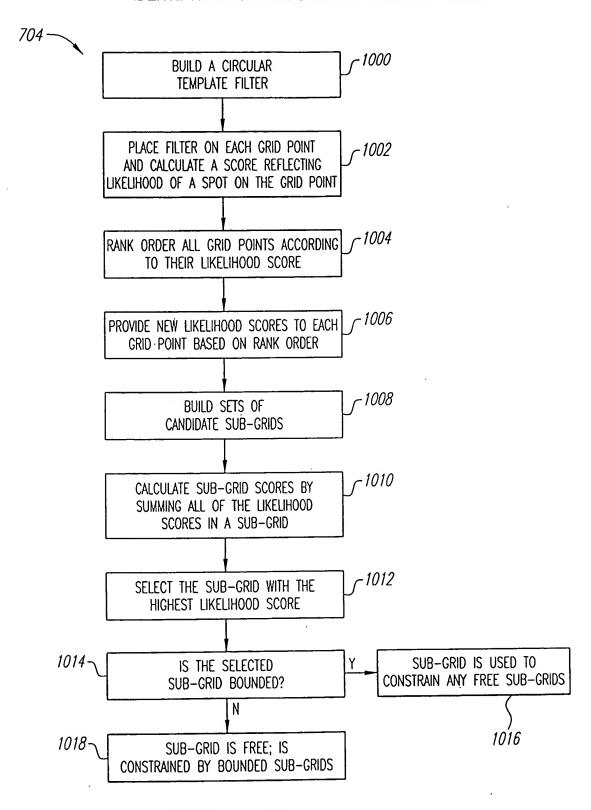


FIG. 10

502

CIRCLE LOCALIZATION

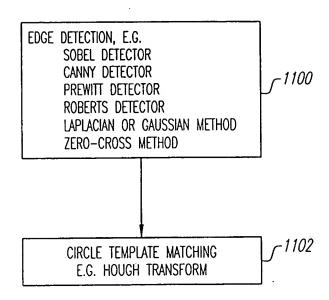
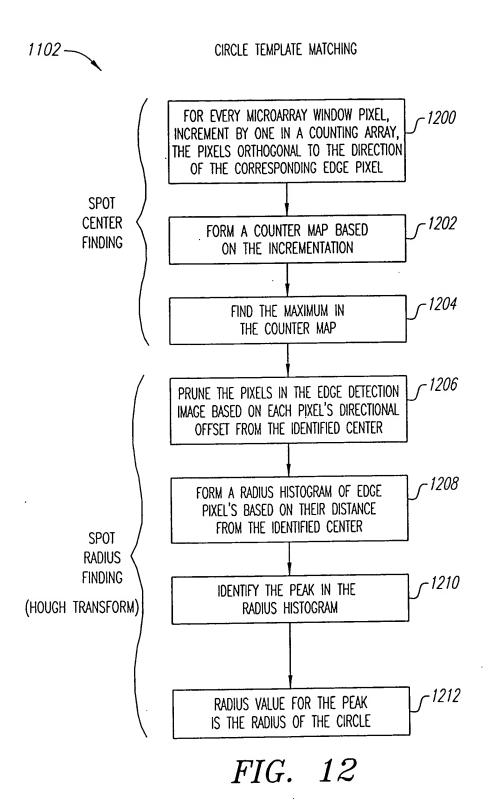


FIG. 11



#### SIGNAL SEGMENTATION

*504* — TENTATIVELY CLASSIFY PIXELS INSIDE OF -1300 THE CIRCLE AS SIGNAL AND OUTSIDE OF THE CIRCLE AS BACKGROUND FIND THE MAJOR MODE IN THE INTENSITY <del>-1302</del> DISTRIBUTIONS OF BOTH SIGNAL AND BACKGROUND SPLIT THE SPATIAL REGION FURTHER -1304 ACCORDING TO THE HIGH- AND LOW-ENDS OF THE SIGNAL MODE AND BACKGROUND MODE RECLASSIFY PIXELS BASED ON THEIR SPACIAL -1306 POSITION WITH RESPECT TO THE CIRCLE AND ON THEIR LOCATION IN THE HISTOGRAM RELATIVE TO THE FOUR THRESHOLDS RESOLVE "UNDETERMINED" PIXELS BY 1308 ANALYZING THEIR POSITION WITH RESPECT TO ESTABLISHED SIGNAL AND BACKGROUND REGIONS IN THE WINDOW MERGE THE SPATIAL REGION INTO -1310 SIGNAL, BACKGROUND, AND CONTAMINATION REGIONS

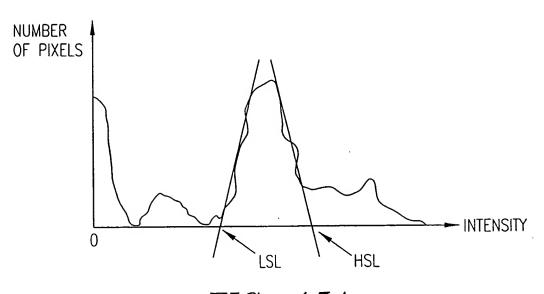
FIG. 13

MAJOR MODE FINDING 1302--1400 FORM AN INTENSITY HISTOGRAM FROM THE PIXELS INSIDE THE CIRCLE. -1402 IDENTIFY THE PEAK ABOVE THE MEDIAN IN THE HISTOGRAM -1404 IDENTIFY ALL HISTOGRAM BINS WITH PIXEL NUMBERS GREATER THAN 0.7 TIMES THE NUMBER OF PIXELS IN THE PEAK BIN REMOVE FROM CONSIDERATION THE IDENTIFIED -1406 BINS THAT ARE NOT PART OF THE CONNECTED GROUP OF IDENTIFIED BINS THAT INCLUDES THE PEAK BIN -1408 FIND THE SLOPE ON EACH SIDE OF THE PEAK IN THE HISTOGRAM 1410 م FIT LINES ON THE HISTOGRAM FOR EACH OF THE TWO SLOPES -1412 IDENTIFY THE HISTOGRAM BINS WHERE THE FITTED LINES INTERSECT THE X-AXIS OF THE HISTOGRAM -1414 REPEAT THE ABOVE STEPS FOR THE PIXELS OUTSIDE THE CIRCLE - BUT IDENTIFY

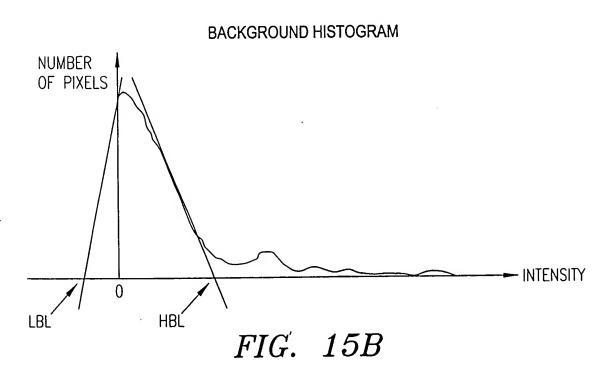
FIG. 14

THE PEAK BELOW THE MEDIAN

## SIGNAL HISTOGRAM



# FIG. 15A



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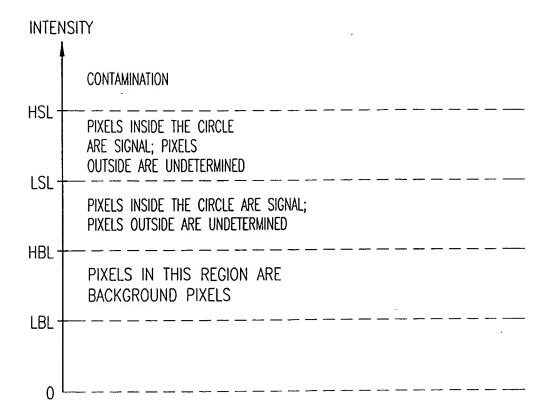


FIG. 16A

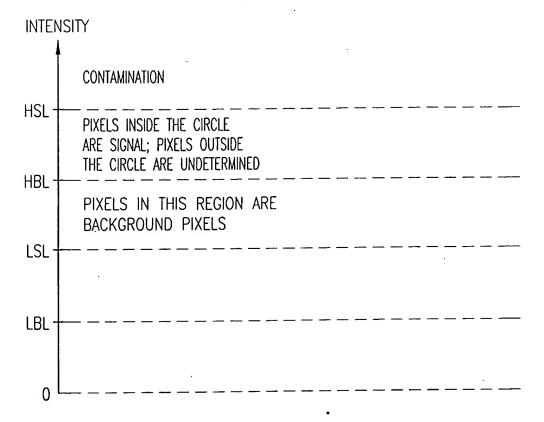


FIG. 16B

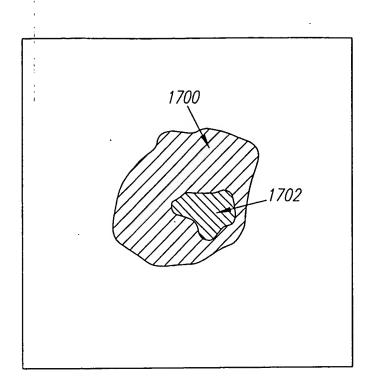


FIG. 17A

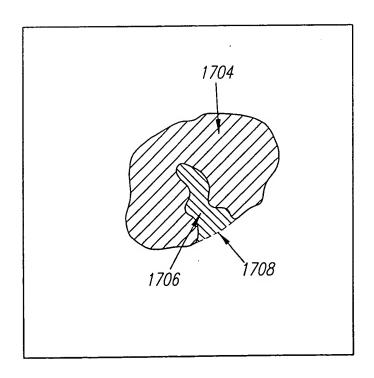


FIG. 17B